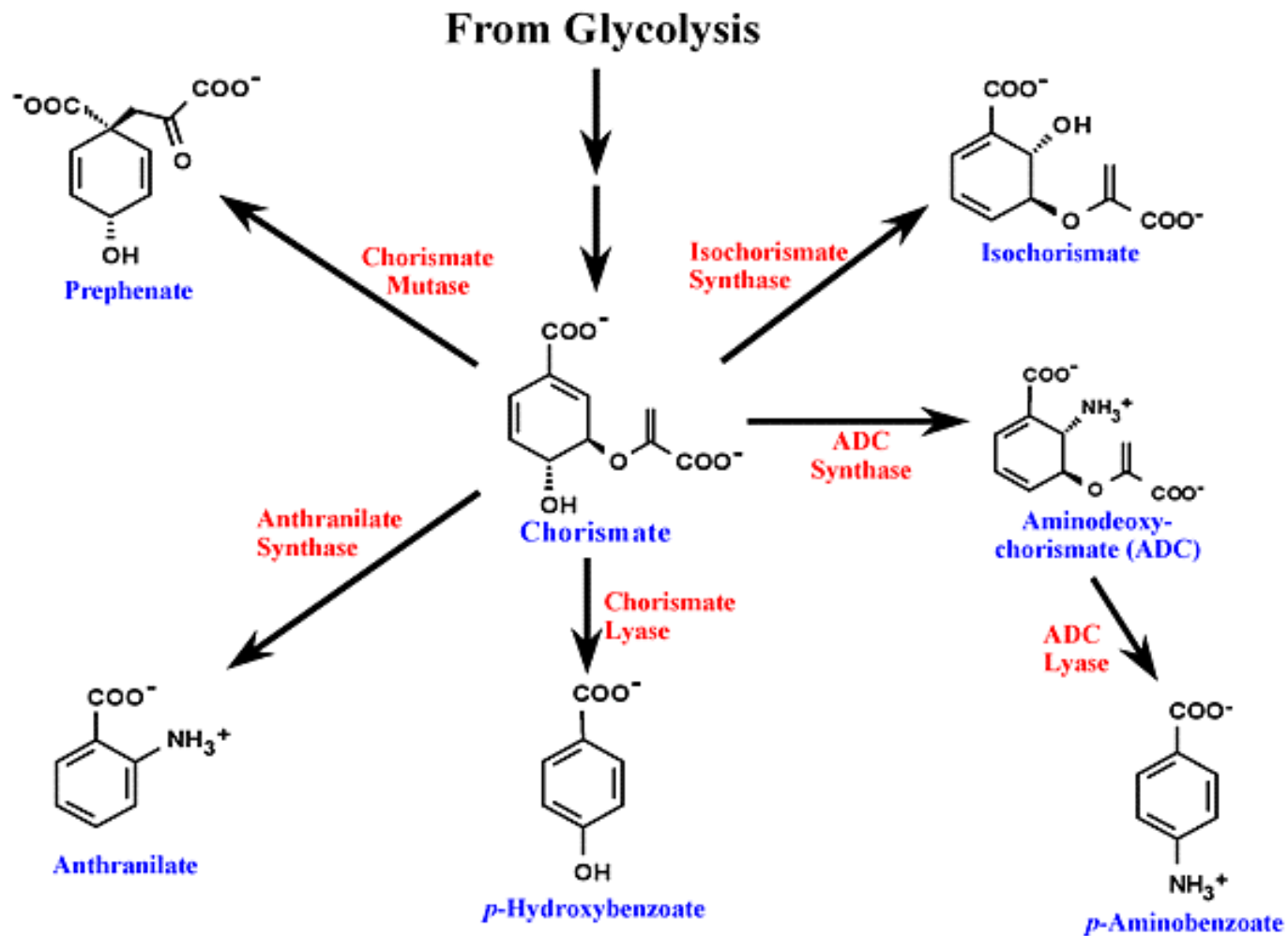


METABOLIC ENGINEERING

NIST Biotech Division, Bioprocess Engineering Group

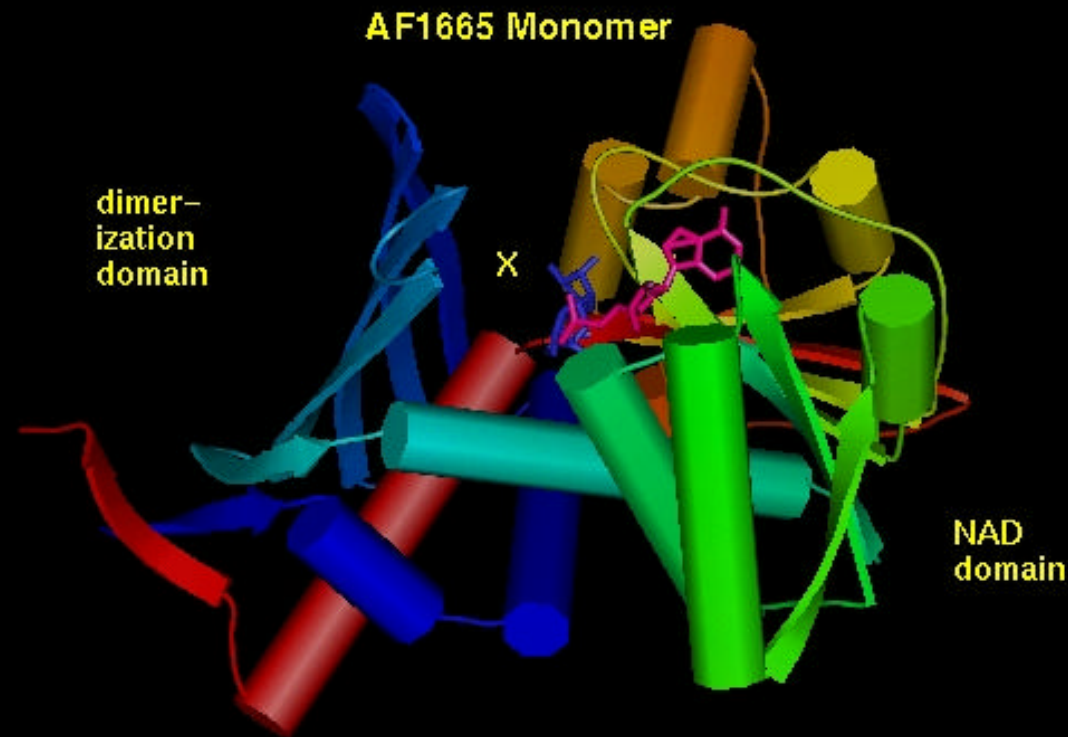
1. oxidation/reduction catalysis
2. microbial identification
3. spectroscopy, fluorescence, QPCR
4. enzyme stability
5. protein expression, microarrays
6. aromatic synthesis

Aromatic Biosynthesis Pathways



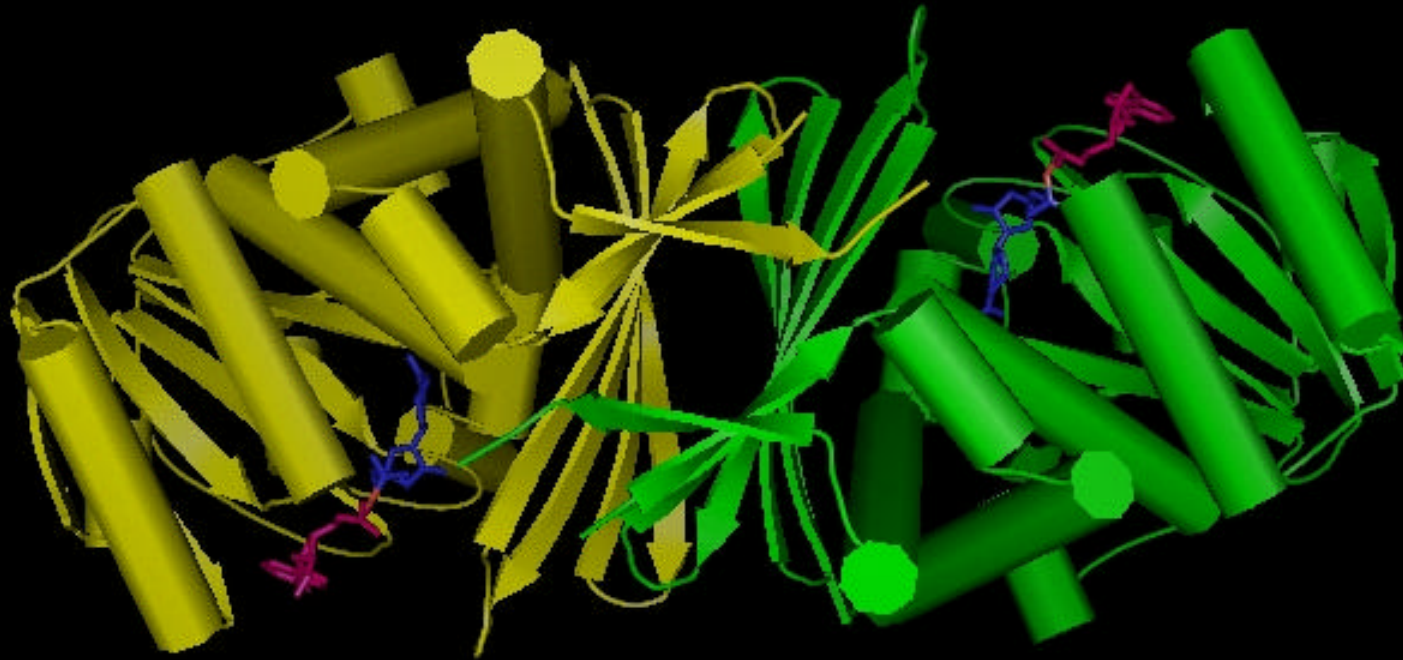
Alanine Dehydrogenase

from *Archaeoglobus fulgidus*; 2.4 Å crystal structure



AD Dimer

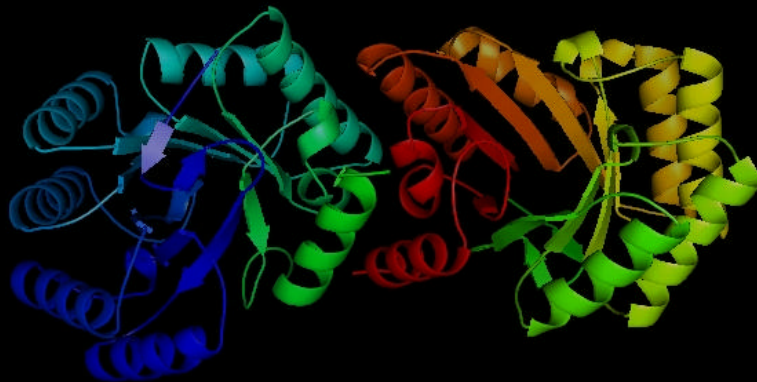
30% sequence identity with
human thyroid hormone
binding protein



Dehydroquinase

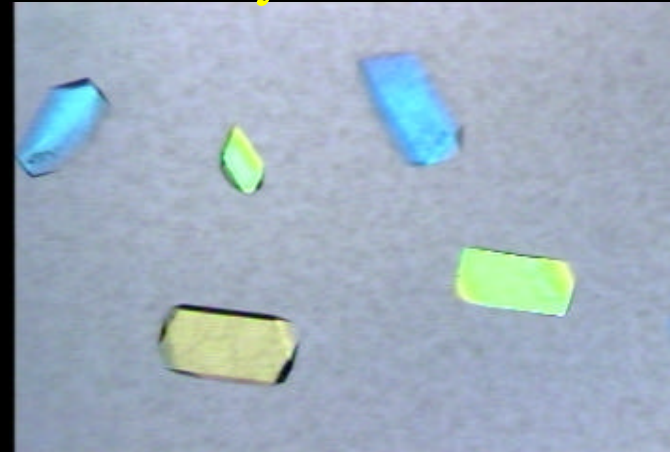
196 amino acids in *Archaeoglobus*.

252 amino acids in *Salmonella*



Known structure from
salmonella (1qfe.pdb)

crystals



2.5 Å diffraction data

Structure determination in progress

Structure/thermostability effects